Cutaneous viral infection

Definition of viruses:

- Viruses are infectious agents; they don't possess ribosomes or other cellular organelles so depend on other cells for replication (obligate intracellular parasites).
- Viruses are differentiated from other microorganisms by:
  1. They don't grow on artificial media.
  2. They don't divide by binary fission.
  3. They contain either DNA or RNA, never both.
  4. They contain no ribosomes or other cellular organelles.
  5. They are not sensitive to antibacterial antibodies.

Pathogenesis of viral infection in skin:

Viral infection may occur in skin in 3 different ways:

1. Direct inoculation:

   Direct inoculate and replicate in epidermis as wart, molluscum contagiosum.

2. Systemic infection:

   Skin lesion produced by systemic viral infection called exanthemata which occur by viremia so the dermis infected earlier than epidermis.

   Examples for viral exanthemata:

   - Macular (rubella and infectious mononucleosis)
   - Maculopapular (measles)

   Vesicular (chicken pox)

3. Local spread from internal focus:

   As in HS and HZ: in which local spread of virus to skin after reactivation of latent viral infection present in peripheral nerves.

Host response to viral infection:

1. Non immunological:

   Cells infected with virus produce interferon which diffuse to other cells and make them less vulnerable to the penetration by new viruses.

2. Immunological:

Humoraal immunity	Specific cell mediated immunity
• Represent major host defense against reinfection with the same virus but not important in primary viral infection. • Mediated by antibodies by: - Neutralize virus by preventing its attachment to target cell. - Enhancement of virus uptake by phagocytic cell. - Complement mediated lysis of infected cell.	• Important in handling primary and recurrent viral infection. • Mediated by sensitized T-cell by: - Direct lysis of infected cell by cytotoxic lymphocytes. - Liberation of lymphokines which attract phagocytic cells.

Skin disease caused by viruses

1) ***PICORNAVIRUS group :*** (very small viruses)

- **Enteroviruses**
  Poliomyelitis,
  Coxsackie virus A & B
- **Rhinoviruses**
  Common cold
- **Echoviruses**
  foot, mouth disease

2) ***MYXOVIRUS* group:** (no Cut. manifestation in this group except in measeles)

- **Orthomyxoviruses**
  Influenza virus
- **Paramyxoviruses**
  - **Paramyxoviruses**
    Parainfluenza, mumps
  - **Morbillae virus**
    Measeles
  - **Pneumovirus**
    Respiratory syncytial viral infect.

3) *HERPES VIRUS group:*

- **Herpes virus hominis** — HS
- **Herpes varicella** — HZ & chicken pox
- **Herpes virus6** — Roseola infantum
- **Human cytomegalovirus virus** — Cytomegalovirus infection
- **Epestein- Barr virus** — IM

4) *TOGAVIRUSES group:*

- **Rubivirus** → rubella (german measles, the 3rd disease)

5) *Human parvovirus B19:*

- Erythema infectiosum (the 5th disease)

6) *POXIVIRUS group:*

- **Orthopox virus** — Variola, Vaccinia, Cowpox
- **Para-poxvirus** — Orf, milker's nodule
- **Unclassified** (molluscum contagiosum)

7) *PAPOVA virus group:* (group of DNA potentially oncogenic viruses)

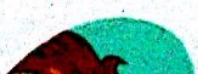
- **Human papilloma virus** → wart, epidermodysplasia Verruciformis

Measles

Def: measles is a high contagious acute viral disease characterized by high fever, cough, coryza, congunctivitis and koplik's spot which followed by generalized macular and papular rash.

C/P: cutaneous eruption is the result of CMI response against measles virus.

1. Typical form:
   - After IP of 10 days, start fever and malaise and associated with:
     - Upper respiratory catarrh. – Conjunctivitis, photophobia.
     - Koplik's spots: white spots with bright red areola on buccal mucosa opposite the premolar teeth and seen from the 2nd day.
   - The cutaneous eruption develop on the 4th day starting on forehead and behind ears then spread to rest of face, trunk and limbs. The rash start macular, then soon become dull red papules which may be diffuse or coalesce in irregular pattern.
   - Rash subside on the 6th or 10th day with residual brownish stain or fine desquamation.
2. Modified measles:
   - IP may prolong to 14-20 days.
   - Usually develop in children who have been immunized with IGs after exposure to the disease or who have been protected with immunization before the age of 15 months.
   - Usually the prodromal stage may be absent or decreased to 1-2 days. Cough, conjunctivitis may be minimal or abscent. Koplik's spots are few or abscent and eruption are sparse and milder.
3. Atypical measles:
   - This is the paradoxical form of measles; occur in children who exposed to natural measles with previously received vaccine.
   - Manifested by high fever, cough, headache, myalgia, abdominal pain, pneumonitis, pleural effusion and unusual rash on hand and feet (macular, vesicular, peticheal)



Complication: encephalitis (most srious), bronchopneumonia, enteritis, otitis media are less seen than before.

DD: - other exanthems: → scarlet fever
Rubella
roseola infantum
erythema infectiosum.

- drug eruption.

TTT:

- Human IGs given within 5 days of exposure may prevent or attenuate infection.
- Isoprinosine are said to modify the course of disease.

Rubella (german measles)

Def: common viral infection affects children and adults caused by rubivirus.

C/P: IP of about 18 days, the disease pass into 3 stages:

- **Prodromal stage:**
  Not seen in children, only in adults. It lasts 1-5 days. Consist of fever, malaise, headache, conjunctivitis, sore throat and enlargement of cervical lymph gland also suboccipital and post auricular. Lymph node enlargement starts 5-7 days before rash and reach maximum in 1st or 2nd day of rash. Prodromal stage may have rash in form of dull red macules or petechiae in 20% of patients.
- **Cutaneous eruption:**
  Start first on face then trunk and limbs, consist of pink macules which first are district then become confluent on face in form of diffuse erythema.
- **Stage of fading out:**
  During 2nd day the face start to clear, macules disappear from face on 3rd day, then trunk start to clear. On 4th day; eruption on limbs disappears.

Diagnosis: the rash and the enlargement of suboccipital gland are characteristic.

Complication: if rubella occurs in the first 16 wks of pregnancy, 30% chance of fetal damage which is higher in the first month (50%-60%) and lower in the 4th month (5%). Damage includes:
(Cardiac abnormalities, deafness, eye lesions, CNS damage, thrombocytopenic purpura).

Prophylaxis: live attenuated rubella virus (vaccine) given to school children at age of 11-14yrs.

Erythema infectiosum

Def: Infectious disease caused by human parvovirus B19, seen in children 2-10 yrs old.

C/P:

- IP is 5-14 days, no prodromal stage.
- Disease start with red papules on face which, coalesce to form hot diffuse erythema giving the face (slapped appearence). Within the next 2-4 days facial erythema subside and maculopapular rash appear on proximal extremities then hands, feet, trunk. The rash of specific lace-like pattern.
- Eruption fade in 6-10 days and May recurre in previously affected sites for 2 wks.

Diagnosis: demonstration of IgM abs against parvovirus.

TTT: no specific ttt.

Viral Infections

① Herpes Simplex viruses

HSVs have worldwide distribution and produce primary, latent and recurrent infections.

There are ② subtypes of HSV which show no cross immunity:

- Direct Contact with Contaminated Saliva (Sexual Contact).
- HSV1: affects skin and Oral mucosa (H.labiale) (HSV1 may also be found in genital infection « Oro-ge
- HSV2: affects genital areas
- HSV3 → Varicella Zoster
- HSV8 → Kaposi Sarcoma

Try primary infection → Latency → reactivation → recurrent infection

- (No neutralizing antibodies).
- 10% Symptomatic (10% clinical)
- 90% asymptomatic (90% subclinical)
- The virus remains dormant in Sensory ganglia.
- Spontaneously / stimulus (eg stress, fever, immunosuppression) (Patients with neutralizing antibodies (Previously infected)

Diagnosis → ** All persons infected with HSV are potentially contagious whether or not the lesions are visible because of asymptomatic viral shedding.

1. Viral Culture
2. Tzanck Smear → For rapid preliminary diagnosis
   - it shows Multi-nucleated epithelial giant cells (Fusion of infected Keratinocytes)
   - it does not differentiate between HSV and VZV
3. DFA (Direct Fluorescent antibody) assay:
   - able to distinguish between HSV and VZV.
4. PCR: Rapid / Sensitive / Specific Method to detect HSV DNA
5. Serological Tests (Western blot) ✓ gold standered for Serological assay
   - 99% Sensitive & Specific For HSV antibodies.
   - Other Tests That Can differentiate between HSV1 & HSV2 antibodies
     Depend on (Type-specific glycoprotein)
     G1 from HSV-1 & G2 From HSV-2.
6. Biopsy: to exclude Cutaneous conditions That can Mimic HSV
   - eg → Vesicular eczematous dermatitis
   - or recurrent FDE on genitalia.

Histopathology:

(1) Ballooning degeneration of epidermal cells → marked Dry acantholysis → intraepidermal Vesi
(2) Eosinophilic intranuclear bodies Surrounded by a clear halo → are usualy seen in balloon cells.

Clinical Manifestations of HSV-1 & HSV-2.

	Immunocompetent individual	Immuno-Comprimed individual
HSV-1 Herpes labialis	→ try infection usually asymptomatic • Herpetic gingivostomatitis • Herpes Labialis • Herpetic whitlow.	• widespread local infection • Chronic Ulcers • Disseminated cutaneous infections. • Disseminated Visceral infections.
HSV-2 Herpes Genitalis	→ try infection Usually asymptomatic • Herpes genitalis (try recurrent)	

Herpes simplex

Def:

HS is one of the co mmonst viral infections. The disease has recurrent nature. The disease runs a mild course except in immunodeficiency and patient on cytotoxic drugs in which the course of disease is aggressive.

C/O:

- Herpes virus hominis type1: which affect skin and mucous membrane.
- Herpes virus hominis type II: affect genital areas.

Mode of infection : by direct inoculation, patients with recurrent HS may have the virus in tears or saliva.

- vertical from mother → Both
- touch
- sexual
- droplet

Primary infection :

a) Herpes virus hominis I: start mainly in infancy or early childhood (1-5yrs) where they are usually minimal and subclinical but severe cases of 1ry infection may occur in:
   - Atopic dermatitis and other skin disease that may lead to wide spread cutaneous lesion (Kaposi's varicelliform eruption).
   - Infant with congenital defect of immunity.
   - Malnutrition
   - Patient with malignancy of the RES.

b) Herpes virus hominis II: Infection is nearly always genital, and starts after puberty.

Recurrent infection: after 1ry infection, herpes virus remain latent in the sensory nerve ganglia or in neurons of peripheral nerves or in schwann's cells of sensory nerves which supply the 1ry infected area. Under certain condition like exposure to cold, trauma, sun, certain foods, reactivation of latent virus occur to produce recurrent infection.

Pathogenesis

Primary Herpes Simplex

IP 3-7 days

→ Affect children (1-5 yrs).

→ Prodrome: → Fever / malaise
→ Localized burning
→ Tender lymphadenopathy
→ occurs before the onset of lesions

→ Lesions: Large painful vesicles on erythematous base (no tendency to grouping)
vesicles → pustules → erosions.
→ crusting → spontaneous resolution (2-6 weeks)
+ Regional LNs are enlarged & tender.

Recurrent

→ grouped small vesicles on erythematous base
→ The vesicles are replaced by crusts
→ Healing occurs within a week → normal skin

* Recurrent Condition.
* Regional LNs are not enlarged (unless any inf of vesicles).

→ prodroma: The onset is usually preceded by aprodroma of localized itching & burning & erythema (only severe)
→ no fever or malaise.

Clinical Varieties:

1) Herpes Labialis (Facialis): * Commonest
* Site → (lips) are the most frequent site.
→ Nose - cheeks - ears → may also be affected.
* post-herpetic erythema multiforme may occur (within 9 days)
(Herpes-associated erythema multiforme).

Eczema Herpeticum (Kaposi's Varicelliform eruption):

* with HSV1 → in patients with pre-existing dermatoses eg → atopic dermatitis (AD)
→ Darier disease
→ MF, PF
→ ichthyosis, burn.

IP 5-12 day

* Clinically: → Extensive eruption of vesicles & pustules occur mainly on areas of pre-existing dermatosis + Fever.
→ Face (usually severely affected) + Marked edema
→ The presence of Monotonous discrete 2-3 mm Hemorrhagic Crust is Diagnostic.

Keratoconjunctivitis

→ Can be primary or recurrence
→ recurrence → present with branching dendritic Corneal ulceration (seen with fluro Stain)
→ can lead to scarring & blindness.

Gingivostomatitis

→ Very painful. Rx by systemic antiviral

Inoculation HS (Herpetic whitlow)

HS infection of the digits in dental & Medical personnel (do not routein use gloves)

Herpetic Folliculitis: of the beared region in male

HS pneumonia: (Fatal)

HS encephalitis: Manifest as: Seizures / irritability / tremors / bulging fontanelle

HS in Comprimised host (Dissiminated HS):

Etiology - a) Wiskot aldrich Syndrome
b) Lymphoma - leukaemia
c) Severe burn
d) Prolonged immunosuppressive Therapy
e) AIDS.

Manifestations

Chronic ulcerative HS

Persistant ulcers & erosions
starting on the face or perianal area.
may be widespread extension → Systemic HS
(chronic perineal ulcerative HS → young males homosexuals in AIDs)

Generalized acute muco-cutaneous HS

* Starts with localized vesicular eruption located in genital areas (in HSV2) or other areas (in HSV1)
* Rapid dissimination with Fever may occur suggestive

Systemic

- Usually follows area or genital lesions of
As
→ area of Necrosis i
→ adrenal - pancreati

Pathology:

1) Marked intracellular edema which produces balloon cell degeneration.
2) Formation of thick walled vesicles by combination of intra-and inter-cellular edema.
3) Multinucleated giant cells in epidermis, theses are epidermal cells with large number of nuclei ranging between 2 and 15.

C/P:

1) ***primary infection:*** differ according to site of infection:

Herpetic gingivostomatitis	Inoculation herpes simplex	keratoconjunctivitis	Herpes genitals
Begin with fever, malaise, excessive drippling, restlessness. Vesicles appear on (tounge, pharynx, palate, buccal mucosa). Vesicles present as white area surrounded by red areolas → rupture rapidly. Regional lymph nodes → enlarged, tender. Within 3-5days → fever subside, complete recovery occur in about 2wks.	○ Direct inoculation of skin → eruption of large bullae or scattered vesicles with enlargement and tender of lymph node. 2ry infection may occur → pustules. ○ Sites: - Finger tips (herpetic whitlow), seen in nurses and dentists. - Face and upper trunk: multiple crops of vesicles and pustules on erythematous base.	○ 1ry herpes infection of eye, usually cause severe purulent conjunctivitis with opacity and superficial ulceration of cornea. ○ Pre-auricular lymph node → enlarged, tender.	○ 1ry infect. with type II herpes hominis virus. ○ Vesicles with erosions on glans, prepuce, shaft in male and on externa genitali in females

⑩ Herpes gladiatorum :→ HSV primary infection, primarily noted in wrestlers (3)
↳ involving extra-mucosal sites typically over face/neck, or arms.

⑪ Neonatal Herpes Simplex:
antepartum → transplacental
intrapartum → H. genitalis during delivery
postpartum → not maternal

** The risk OF Transmission to the neonates from an infected mother is
(High) 50% → among women with (1st) episode genital herpes near the time of de
and (Low) <3% → among women with recurrent herpes.

ⓐ Early intra-uterine infection :- Disturbed embryogenesis . abortion - Cong anomalies not compatible with life

ⓑ Late intra-uterine infection :- growth & psycomotor retardation.
Microcephaly
Wide Spread recurrent vesicular eruption (resemble epidermoly

ⓒ Neonatal infection :- Localized cutaneous HS in scalp or buttocks.

② Genital Herpes (Herpes progenitalis): HSV2

Primary genital infection 2d-2w
*More Severe & prolonged Than >recurrent infection.
① Constitutional Symptoms
② painful grouped vesicles in genitalia → pustules → Crusting → Tender ulcers
③ painful lymphadenopathy
Cervicitis / urethritis / proctitis.
painful erosive balanitis

Recurrent genital her
*More frequent with HSV- 2? HS
* Mild
*① limited number of vesicles re on the genitalia or buttocks (especially in women).
*② Prodroma ± followed by :- grouped vesicles → pustule - ulceration → resolution (
*③ Complications are uncom
*④ Frequency of recurrence d with the severity of the inf

...vesicles become ...magic or pustular in massive crops, heel with scar. TTT: Acyclovair in dose 5-10mg per kg, IV every 8hrs, systemic antibiotics in case of 2ry infection.

A → aseptic meningeitis
Bacterial infection
2ry infection

2) *Recurrent infection:*

Differs from 1ry infection in:

a. Smaller size of vesicles.
b. Close appearance.
c. Absence of constitutional symptoms.
d. Examples:
   - Herpes labialis or herpes facialis: start with burning or itching sensation followed after few hrs by appearance of closely grouped vesicles on erythematous base; heal in 7-10 days without scar. Recurrence usually occurs in the same region.
   - Recurrent HS of thorasic or lumber region: the vesicles may be arranged in line or zosteriform distribution and may be associated with deep pain and lymphadenopathy so it might be confused with HZ.

Complications of HS:

- 2ry leucoderma.
- EM with typical iris pattern may follow each attack of HS.
- Recurrent infection of eye may produce dendretic ulcer.
- Herpes genitalis in women may be associated with high incidence of cancer cervix.
- Encephalitis may complicate disseminated infection in immune deficiency disorders, malnutrition.
- kaposi's varicelliform eruption (eczema herpeticum): may complicate both 1ry and recurrent infection in certain patients include atopic patients or others as Darrier's, pemphigus foliaceous, icthyosiform erythroderma or other inflammatory diseases. C/P: the vesicles become haemorrhagic or pustular in massive crops, heel with scar. TTT: Acyclovair in dose 5-10mg per kg, IV every 8hrs, systemic antibiotics in case of 2ry infection.

A → aseptic meningitis
B → Bacterial infection
C → Cancer cervix ; scarring.
D → Depression, Dissimination
E → EM
N → Neonatal

2ry infection
aseptic meningitis
urine retention
Cancer Cervix
depression
Neonatal

Prophylactic

① Avoid trigger factors — stress
② CS in pregnant female with genital HS.
③ Male & female with H. progenitalis:
- avoid intercourse if there is a history of H. progenitalis in male or female.
  (Spermicidal foam for ♀ and condom for ♂ followed by wash with water & soap after intercourse).
④ Specific vaccines to prevent recurrence
⑤ Non-specific immune therapy e.g. interferons.

Curative

① Vesicular stage: antiseptic e.g. gentian violet
Crusted stage: antiseptic ointment + systemic antibiotic (2ry infection)

② Antiviral Therapy:

Herpes labialis
- كريم - Acyclovir 5% + Hydrocortisone 1% cream
  ٥ مرات في اليوم لمدة ٥ ايام
+
- (جرعة عالية) - Valacyclovir أقراص (2gm)
  مرتين في اليوم يوم واحد

Herpes progenitalis

First episode
- Acyclovir 400 mg
  ٣ مرات في اليوم لمدة ١٠ ايام
- Valacyclovir 1gm
  مرتين في اليوم لمدة ١٠ ايام

Recurrence
- Acyclovir 400 mg
  ٣ مرات في اليوم لمدة ٥ ايام
- Valacyclovir 500 mg
  مرتين في اليوم لمدة ٣ ايام
  (الصبح 2gm، بالليل 2gm)

Recurrent in setting of HIV infection
- Acyclovir 400 mg
  ٣ مرات في اليوم
- Valacyclovir 1gm
  مرتين في اليوم

Recommended until all muco-cutaneous lesions are healed.

*** Benefits of early Tt of H. progenitalis:??**
Early (24-48 hours of onset).
Acyclovir, Famciclovir, Valacyclovir.
① Reduce pain ↓↓ الوجع
② Reduce the duration of viral shedding
③ Reduce the time to heal for 1st episode
④ Reduce recurrent genital herpes.

*** Eczema Herpeticum (Kaposi's varicelliform eruption)**
- Acyclovir 400 mg
  ٣ مرات في اليوم
- Valacyclovir 1gm
  مرتين في اليوم

→ Recommended until all muco-cutaneous lesions are healed

*** Immunocompromised**
- Acyclovir 400 mg
  ٥ مرات في اليوم
- Valacyclovir 1gm
  مرتين في اليوم

→ Recommended until all mucocutaneous lesions are healed

*** Neonatal HS**
- Acyclovir 20 mg/Kg IV / 8 hs for 21 days

Tt of acyclovir-resistant herpes simplex virus infection

③ Photoactivation
Painting the lesion with dye صبغة → Neutral red / toluidine blue
& then exposing it to fluorescent light.

TTT:

1) Systemic ttt:

a) Acyclovair:

(5-10mg/kg, IV every 8hrs, continued for 7-10days) indicated in:

- Severe neonatal herpes simplex infection.
- Disseminated HS with encephalitis.
- HS with immunodeficiency.
- Kaposi's varicilliform eruption.

Oral doses of acyclovair: (200mg 5 times/day for 5days) in less sever cases.

b) Isoprinosine: 50mg/kg.

2) Topical ttt:

a) Topical acyclovair cream, 5times daily for 5 days.

b) Zinc sulphate4% in water may help.

c) Mild cases need no ttt.

:: Varicella and Herpes zoster ::

Etiology:
- Varicella and HZ are produced by the same Viruse (Varicella Zoster Virus).
- 1ry infection → chicken pox (Varicella) → virus remains dormant in one of the Sensory ganglia → condition enter latency period → Reactivation → Spread of the Virus to the skin supplied by the affected root → Herpes zoster (Shingles)

* Varicella (Chicken pox) ::

* Commonly affect children
* Mode of transmission: ① Airborne droplets (usual route) ② Direct contact with vesicular fluid.
* Incubation period: 11-20 days
* Varicella is highly contagious → 80-90% of household Contacts → develop clinical infection.
  → The affected individual is infectious from 1-2 days before skin lesions appear until all of vesicles have crusted.
* Mechanism
  During varicella infection
  Viral replication within regional LNs —2-4 days→ primary viremia → Viral replication in the liver, Spleen, other organ
  → Secondry viremia
  → Seeds entire body
  (14) days post-exposure) اسبوعين
  - During this period, the virus travel to the epidermis by invading the Capaillary endothelial cells → Then VZV
    Travels from the mucocutaneous lesions to dorsal root ganglion cells where it remains latent → until reactivation:
* Clinically: Fever → rash develops (macule → papule → vesicle (1-3mm diameter) with a clear serous fluid surrounded by a narrow red halo "dew drops on a rose petal" قطرات الندى على بتلة وردة → pustule → crust → Seperates without scar unless Secondry infected!
  - New lesions continue to develop → so different stages of lesions can be observed in the same (polymorphic), The lesions are more numerous on Trunk.
* A person with zoster → Can infect another with chicken pox → if the Suspible individual Comes into direct Contact with vesicular fluid.
* Individuals with chicken pox or zoster → Cannot directly give another person zoster → because herpes zoster is caused by reactivation of Latent VZV.

Complications
① 1ry Varicella pneumonia : (adults with Varicella) , 10% Mortality rate
② Reye's Syndrome : Varicella + Fatal encephalopathy
③ Neonatal Varicella : Fatal, Disseminated, → if the mother has developed varicella 5 days before deliv
④ Varicella in Comprimeoed host : Severe Dissimination to Various organs eg Varicella pneumia → Death.

Treatement of Varicella :
① Calamine Lotion ② Cut nail short and wearing gloves
③ Anti-histamince
④ Topical or Systemic antibiotic in 2ry infection
⑤ Anti-viral.

distinctive feature

Varicella (chicken pox)

Def: It's the 1ry infection of HZ.

C/O: Caused by varicella zoster virus.

Mode of transmission: Mainly transmitted by droplet infection, the vesicular fluid is of little importance in transmission and the dry scabs left are non infectious.

C/P:

- IP of 14-17days.
- The disease start with fever, malaise which continue for 2 days → papular eruption → rapidly transform to vesicles, the content of vesicles may become turbid and change to pustule.
- The vesicles appear in 3-5 crops over 2-3days.
- The predilection site: face, trunk, scalp and limbs, oral mucosa is affected in form of vesicles seen on the palate.
- Characteristic feature of the vesicles is their presence at different stage of evolution: within2-4 days → the vesicles dry → scabs → soon separate → slight erythematous normal skin. Pruritis may be present.

N.B: Heamorrhagic Varicella: consist of high fever, severe constitutional symptoms and hgic vesicles, usually seen in: malnutrition, diseases treated by steroids, state of immunosuppression as Hodgkin's.

Complication:

- 2ry infection.
- cutaneous gangrene may follow 2ry infection.
- Fetal damage in form of scarring deformity and eye damage if varicella affects pregnant women.

Diagnosis:

Distinctive features of varicella are:

1) Centripetal distribution.
2) Polymorphism in each affected site.
3) Rapid progression to crust.

Prevention:

1) Prophylaxis by live attenuated vaccine.
2) Specific immunoglobulins is given within 4 days of contact reduce the severity but don't prevent it, it's given for neonates whose mothers has varicella 4days before or 2days after delivery and given for immunocompromised patients.

TTT:

1) Varicella only requires symptomatic ttt.
2) Acyclovair given in severe cases and as early as possible (1st or 2nd day), the doses: 10mg/kg IV every 8hrs for 5-10 days.

Herpes zoster

elderly > 50 years 5% in children

Def:

HZ is the result of reactivation of latent residual varicella virus in the sensory neurons. The precipitation factors may be: cytotoxic drugs, external trauma, radiotherapy and HZ is frequent in patients on immunosuppressive drugs or having malignancies as Hodgkin's or leukemia.

C/P:

- HZ starts by pain (1st) which may be severe and associated with fever, malaise, headache and tenderness localized to area supplied by one or more dorsal roots.
- After 3-4 days: appear closely set papules→ rapidly become vesicles → pustules in continuous or interrupted band.
- LN in the area enlarged and tender.
- Recovery if no complication complete within 2-3wks in children and young adults and within 3-4wks in older patients.

Complication:

- 2ry infection is common in form of pustules, ulceration and may leave scar.
- Ocular complication, occur with ophthalmic zoster in 50% of cases in form of keratitis.
- Facial palsy (Ramsey-Hunt $) in case of involvement of geniculate ganglion which may be permanent. There is also pain in ears with vesicles in pinna and external auditory canal.
- Post herpetic neuralgia which is the commonest.

TTT:

1) Acyclovair:
   - Indicated in severe cases and should be as early as possible (1st or 2nd day).
   - The dose is 10mg/kg IV every 8hs for 5-10days or oral doses in less severe cases in dose of 800mg, 5times/day, for 5days.

Herpes Zoster

* Occurs in adults (>50 years) • 5% are children.
* Clinically: ① Pain : is Usually 1st Manifestation. severe pain
② 3-4 days after → group of vesicles on an erythematous base → arranged along the course of the Sensory nerve.
→ Strictly unilateral, lesions may be hemorragic or necrotic & ulcerated.
④ Regional LNs : enlarged, Tender
⑤ Healing : within 2-3 weeks, usually with scar formation.
* Mode of Transmission: (1) Direct Contact (with broken blisters) • (2) Airborne droplets.
* patients are Contagious (less than Varicella), Newborns are at high risk of getting chicken pox from someone who has HZ
* Complications
① Post-Herpetic neuralgia (PHN) → Characterized by dysesthetic pain that persists after the skin lesions have healed.
• affect 10-20% of HZ patients and ↑↑ in incidence & Severity with age.
• it is either → Continuous burning pain with hyperthestia
→ Spasmodic shooting type.
② Secondry infection → Common
③ Gangerne of skin
④ HZ opthalmicus : Virus attack the gasserian ganglion (V) → (GG)
→ eruption on the tip of nose, upper eyelid, forhead.
→ Conjunctiva is red, swollen with Superficial or deep Keratitis.
N.B Lesions at tip of the Nose (Hutchinson's Sign) → Signal Possible Ocular infection → Since Nasociliary nerve is involved → which is a branch of the opthalmic nerve.
N.B ARNS → Acuteretinal necrosis syndrome may occur with zoster of the opthalamic nerve.
⑤ Ramsy-Hunt Syndrome : affection of the geniculate ganglion (GG) → ear pain/tinnitus/deafness
→ loss of taste Sensation from anterior 2/3 of Tongue
→ Facial palsy.
⑥ Motor involvement : 5% of cases (Commoner in older patients & those with malignancy)
⑦ HZ in comprimised hosts → Dissiminated HZ with systemic Manifestations as → pneumonia encephalitis
⑧ Dissiminated HZ (unusual clinical presentation)
atypical HZ in HIV patient: ① persistant crusted verrucous lesions in HIV-infected patient → ② More than 1 dermatomes affected ③ cross midline.
• post-Herpetic Hyperhydrosis.
• Dissiminated cutaneous disease (70 could be outside the area of primary or adjacent dermatomes).
① Systemic Manifestations : pneumonia
encephalitis
gastro-enteritis.

Diagnosis:

Culture: → Don't grow on ordinary culture as HS
→ grow on tissue culture (Human Fetal diploid Kidney cell).
Not pathogenic for Several Laboratory animals (as in HS)
Tzanck Smear → as HS
PCR → highly sensitive & rapid Technique
Serology → +ve for HZ (diagnostic) if Serum has at least ④ fold increase in titre of VZV

Treatment of VZV

Prevention

VZIG :
- in immunocomprimsed patients within 96 h (4days) of exposure to varicella
- recommend for susceptible pregnant women
- Neonates whose mothers become infected shortly after birth.
- ✦ protection Lasts for (3weeks)

3) Life-attenuated VZV vaccine (Zostavax) (OKA Strain)
- FDA approved
- very safe
- High efficacy (96% in preventing Varicella or Less Severe disease).
- ↓ incidence of HZ
- although The oka Strain can reactivate and Lead to Herpes zoster (Mild), most cases of varicella Following vaccination are due to wild-type virus.

General

1. Analgesics مسكنات
2. Vesicular Stage → cool Compresses كمادات باردة
3. Crusted Stage or any bacterial infection → Topical or systemic antibiotic
4. Care of ocular lesions
5. Carbamazepin (Tegretol) 600-800 mg/day
6. Systemic Steroid ????

↓ incidence of post-Herpetic Neuralgia if started early 5-6 days of onset.

Prednisone 40-60mg/day For 2-3weeks.

Antiviral agents

✦ effective :- 1st 72 hours of vesicular eruption or within 7 days → beneficial.

① Acyclovir (Zovirax)
- Dose: 800 mg 5times daily for 7 days خمس مرات في اليوم لمدة أسبوع
- effective by IV, cream (useless).
- Short Serum half life (2.5-4hours) → frequent dosing
- it Inhibit DNA polymerase
- ↓ healing time & ↓ duration of Pain → No effect on PHN

② Valacyclovir (Valtrex)
- prodrug of acyclovir (L-valayl ester of acyclovir)
- Dose: 1gm 3 times daily For 7 days ثلاث مرات في اليوم لمدة أسبوع
- ↑ Oral bioavailability
- FDA approved for HZ
- ↓ healing time, ↓ duration of pain, little effect on PHN.

③ Famciclovir (Famvir)
- Dose: 500 mg 3 times daily For 7 days ثلاث مرات في اليوم لمدة أسبوع
- ↑ Oral bioavailability
- FDA approved For HZ.
- it Inhibit viral DNA polymerase.

④ Foscarnet (Foscavir)

✦ Varicella zoster virus infection

(acyclovir)

✦ Varicella :- 20 mg/kg → 7-10 days حبوب ٤ في اليوم

✦ HZ → acyclovir : 800 mg → 5 times daily / 7-10 days
- Valacyclovir : 1gm → 3 times daily / 7 days
- Famiciclovir : 500 mg → 3 times daily / 7 days.

✦ Immuncomprimsed 20 mg/kg acyclovir IV / 8h For 7-10 days

✦ pediatric immuncomprimsed 10 mg/kg IV / 8h For 7-10 days

- Amitrriptyline, Carbamezipine (the two drugs together).
- Nerve block by intralesional local anesthesia and corticosteroids.
- Acupuncture.

Treatement of PHN

(1) Analgesices

(2) Anti-viral → Famciclovir / Valacyclovir → within 72 h from 1st Vesicle → Both drugs ↓ duration & pain of PHN in pts > 50

(3) Corticosteroids → Used alone or in combination with anti-viral drugs
↓ inflammation → ↓ further nerve damage → ↓ Chronic pain associated with it.

(4) Anti-Convulsants →
- Carbamazepin (Tegretol) : 600-800 mg/day
- Gabapentin (Neurontin) : 1st day : 300 mg 1 tablet
  2nd day : 2 tablet
  3rd day : 3 tablets
  (and on → doses ranging up to 3600 mg/day)

* During acute herpes zoster : Valacyclovir + Gabapentin
Together are more effective in preventing PHN than Valacyclovir alone.

- Pregabalin (Lyrica) : - Dose : 75-150 mg twice daily
  - The dose may be increased to 300 mg/day within 1 week based on efficacy and tolerability
  - in patients with reduced renal function → adjust the dose as it is primarily eliminated by renal excretion.

(5) Tricyclic anti-depressants : eg amitriptyline (Tryptizol 10-25 mg) → up ↑ 75 mg

(6) Nerve block : Sympathetic & Somatic nerve blocks.

(7) Nerve Surgery

(8) Local treatement : → EMLA cream
→ Capsaicin → 8% Capsaicin patch → recently approved by FDA for tt of PHN
↓↓ reduce pain up to 12 weeks after a 1 hour application

2) Mild cases need only symptomatic ttt in form of drying lotions and antibiotics and analgesics.
3) Corticosteroids given in acute stages to reduce the inflammatory changes, also in severe painful cases in dose of 40mg for 10 days, withdrawal in 3wks but it may cause dissemination of HZ if patient is immunocompromised.
4) Post herpetic neuralgia may respond to:
   - Amitrriptyline, Carbamezipine (the two drugs together).
   - Nerve block by intralesional local anesthesia and corticosteroids.
   - Acupuncture.

Treatement of PHN

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↓↓ reduce pain up to 12 weeks after a 1 hour application

Roseola infantum

Def:
Common exanthematic fever in children less than 2years; caused by herpes virus 6.

C/P:

- IP is 10-15days.
- The prodromal stage consist of abrupt high fever for 3-5 days, usually not accompanied by any symptoms but may periorbital oedema and haematuria → after temperature falls, an eruption appear in form of rose pink maculopapules on neck and trunk → spread to face, trunk, limbs.
- After 1-2 days the rash fades with no scaling or pigmentation.
- Cervical or occipital LN may be enlarged.
- No specific TTT required.

Infectious mononucleosis

Def:
Virus infection caused by EB virus. The 1ry infection followed by persistence of virus in lymphoid cells.

Mode of infection: by direct contact (kissing) or droplet infection.

C/P:

- IP is 33-49 days.
- Disease start by fever which persist for 5-7 days, but may continue for 2wks, associated with sore throat and membranous tonsillitis with small petechiae at junction of soft and hard palate (pathognomonic).
- Generalised enlargement of LN and most marked in cervical LN.
- Skin eruption seen in 10-15% of cases in form of macules and maculopapules on trunk, face, limbs.
- A very characteristic feature of IM is the exacerbation of the disease with antibiotics especially Ampicillin.

Diseases caused by poxvirus

Molluscum contagiosum

Def:

Mollusc contagiosum is viral infection caused by unclassified poxvirus. Consist of translucent or creamy papules with central umblication.

Mode of transmission: Transmitted by droplet infection.

Pathogenesis:

- The virus first enters the basal keratinocytes → viral replication and production of new DNA particles → rapid cell proliferation which occur in basal and suprabasal layer.
- This proliferation lead to broadening of the rete ridges in both vertical and horizontal direction → compressing dermal papillae so appear as fibrous septa between epidermal lobules (pearl appearance).
- Later on the cells at the base of the lesion will destroy → softening of the centre and depression of the top → typical umblication.
- Under microscope the virus appears as large hyaline bodies (purple-red by H&E) seen among the broadened rete ridges. The largest number of molluscum bodies seen in the centre of the fully developed lesion.

C/P:

- IP is 14 days-6 months.
- Site: The predilection site is face, neck and genital areas; however any site can be involved.
- Shape: The lesion is shining, pearly white, hemispherical, umbilicated papule which may show a centre pore.
- Size: a diameter of 5-10mm can be reached in 6-12wks but larger lesions may be found.
- Course:
  - Spontaneous healing may occur in some lesion.
  - Spontaneous healing start by inflammation → suppuration → crustation → destruction of the lesion.

Molluscum Contagiosum (MC):

- Self-limited epidermal (Pox virus) infection.

→ Characterized Clinically by:
- Single or Multiple, Skin coloured, Umbilicated papules
- Occuring in → children / sexually active adults (20-29yrs)
- in HIV+ve patients → numerous molusca usually arise on the face.
- ♂ > ♀

Etiology → Molluscum Contagiosum virus (MCV)
- Large / double-Stranded DNA Pox virus.
- 2 Types → MCV-1 /// Majority of infection (90%)
  - MCV-2

Transmission
1. Skin to Skin Contact, clothing, or towels → possible in Steam & Sauna baths.
2. Sexual : adults.
3. autoinoculation : atopic patients

Clinically

IP :- 2 wks ——— 6 months

Site :-
- Face, Trunk, axilla, Hands.
- Sexual Transmission : genitalia / lower abdomen / upper Thigh.

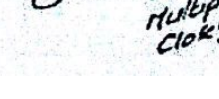
Lesion → it is characterized by
- Single or Multiple
- Small (1-5mm)
- Skin coloured or pearly white.
- Waxy, dome shaped
- Papule
- with Umbilicated Center. (which become more apparent after freezing with ethyl chloride).
- A Curd-like Substance Can be expressed from its Centre

→ Sometimes the lesions becomes inflammatory
- Spontaneous disappearance within 6-9 months

DD :- Flat wart
- Syringoma.

HIV +ve patients
1. Hundreds of lesions appear, mainly on the Face
2. Giant Molluscum may occur.
3. Spontaneous regression doesn't occur.
4. HAART (Highly active anti-retroviral Therapy) → lesions often recoke.

Histopathology
+ The epidermis grows down into the dermis as Multiple, closely packed lobules.
+ Many epidermal cells contain Large intracytoplasmic inclusion bodies (Molluscum bodies) /// pathognomonic
- Molluscum bodies.



Treatment
+ Because the disease generally resolve Spontaneously, Self-limited
  Painful aggressive Therapy is not indicated
- Avoid Swimming pools, shared towels,
1. Curettage with or without light electro-cautery (Emla cream) local anaesthetic applied 1h before Therapy to pain
2. Cryotherapy
3. Chemical applications of TCA or phenol to the lesion.

- Usually most cases are self limiting within 6-9months but some lesions may persist for 3-4 years.

DD: solitary molluscum may resemble pyogenic granuloma, early keratoacanthoma, and early epithelioma. Diagnosis confirmed by pathological exam.

TTT:

1) Often leave to resolve spontaneously especially in young children in whom ttt will be painful or frightening.
2) Application of adhesive plaster every night may help to remove small lesions.
3) Simple mechanical method by expression of the content by squeezing the papule with blunt forceps may be successful.
4) Superficial curettage with sharpened wooden spatula may be sufficient.
5) Chemical application of caustics like silver nitrate, phenol, or strong iodine solution may be curative.
6) Cryotherapy may be helpful.
7) Diathermy should be reserved for large lesions as it leave scars.
8) Topical retinoid acid has been suggested in resistant lesions.
9) Topical 10% properdin iodine solution and 50% salicylic acid plaster application are very effective in ttt of some lesions.

Diseases caused by Papova virus

Common infectious wart

Def:

Warts are infections of skin and contagious mucous membrane by members of papilloma virus group.

Mode of infection: warts are transmitted by direct contact or indirect by contaminated objects, or autoinoculation from hand to foot. Susceptibility to infection depends on the immune response of host.

Pathology:

1) Hyperkeratosis, hyperplasia of all layers of epidermis.
2) Rete ridges are elongated and flattened and converted towards the centre of wart.
3) Large vacuolated cells and clumps of keratohyalin granules within and below granular layer.
4) Dilated and tortuous blood vessels in dermal papillae.

Clinical features: eruption follows IP of 1-8 months (average 4 months):

1. **Common wart:**
   - **Caused by:** HPV numbers (2, 4, 7)
   - **C.P:**
     - The typical lesions are firm papules with rough horny surface.
     - Size: (few mms - over a centimetre) in diameter.
     - Site: they occur anywhere on skin but common sites are back of hands, fingers and knees. And are rarely seen in genital area.
   - **DD:**
     - Large wart may like tuberculosis verrucosa but the latter surrounded by erythematous areola.
     - Acrokerato-verruciforms of Hopf seen in Darier's.
     - Subungual fibroma in tuberous sclerosis.

2. **Plane wart:**

- **Caused by:** HPV number 3.
- **C.P:**
  - The typical lesions are smooth flat or slight elevated papules and skin coloured or greyish white in colour.
  - The shape of lesion usually round.
  - The size is 1-5mm or more in diameter. Plane wart may coalesce.
  - Site: the sites of predilection are face, shin and back of hands.
  - Koepner phenomenon is commonly seen especially at site of scratching.
- Plane wart tends to disappear spontaneously after few wks or months but in some cases may persist for years.
- **DD:** lichen planus but LP associated with pruritis and Wickham's stria are characteristic of LP and its unusual seen on face.

3. **Planter wart:**

- **Caused by:** HPV number (1, 2, and 4). Mosaic wart caused by HPV 2.
- **C.P:**
  - The primary lesion is small shiny papule which soon become → sharply defined, rounded with a rough keratotic surface and surrounded by smooth ridge of thickened epidermis which not continued over surface of wart.
  - Site: the commonest sites are the pressure points, heels or the metatarsal heads.
- **Mosaic warts:** represent plaques of closely grouped warts. Planter warts are usually painful but mosaic warts are painless.
- **The duration:** is very variable, average duration before puberty is less than year while in older children and adult may persist for years.
- **DD:** a. Callosities are frequently confused with planter wart. But: Callosities have uniformly smooth surface, paring of callosity doesn't produce bleeding points and epithelial ridge around callosity continue with the lesion.

Human papilloma Virus

① Common wart (Verruca Vulgaris) → Firm papules, with verrucos hyperkeratotic Surface
- occurying singly or in graps.
- Commonly on dorsal aspect of hands & fingers
- periungual warts are Common

Q Histopathology Histopathological Criteria of Verruca Vulgaris.

-(1) Hyperkeratosis, Acanthosis, papillomatosis
-(2) Rete ridges → are elongated, Point radially towards The center of The wa
-(3) groups of Large Vaculated cells → in Upper stratum Malpighi & in granular Layer
-(4) alter of parakeratosis lies over The crest of The papillomatouse elevation

Filiform wart : Shows a thread-like horney projection. arising from a horney base.
Seen Most Commonly → Face / Scalp
Butchers → high incidence of VV hands.

Verruca plana :
- Slightly elevated, Flat, Smooth papules, Linear arrangement in Scratch marks (Köebne phenom
- Some patients with Flat warts develop clinically evident inflammation around this warts → precedes Their spontaneouse involution

Histopathology
- Hyperkeratosis, Acanthosis
- No papillomatosis or parakeratosis
- Numerous Vaculated cells lie in The upper stratum malpighi & in granular cell Layer
- Horney Layer * pronounced Basket-wave appearance » → resulting from Vaculation of The Horny Layer.

Plantar wart (V. plantaris)
- Commonly → pressure points → heel → 5 / metatarsal areas
- painful (usually)
- Usually have rough Keratotic Surface, Studded with Multiple Small black dots (Thrambosed Capaillaries within dermal papillae).
  + peripheral rim of Thickened skin
- When Multiple warts Coalesce into Large plague → it is Called (Mosaic wart)

Myrmica (Deep palmoplantar wart) :
- Deep, Tender, endophytic Lesions
- They donot Coalesce,
- They are usually Covered with a Thick Callus → its removal → Soft brownish tissue & Small bleeding points (DD : Callus → no bleeding points)

Histopathology in Myrmica :
- The nuclei of epidermal cells is deeply basophilic
- Surrounded by a clear zone.
- cytoplasm contain Large, irregularly shaped, homogenous, esinophilic (inclusions) → representing Keratohyaline.

- **N.B:** Continuous paring of the planter wart result in appearance of small bleeding points, these points represent the tips of elongated dermal papillae containing dilated tortuous blood vessels.

4. **Filiform and digitate wart:**

   Are commonly seen on face and neck, they have the surface like common wart but usually have longer stall.

5. **Genital wart:**

- **Caused by:** HPV 6. And sexually transmitted.
- **Microscopically:** differ from common wart in:
  - The horny layer is parakeratotic instead of hyperkeratotic.
  - The vacuolated cells in upper Malpighian layer are limited in distribution and not found in all sections. And carcinomatous changes may rarely develop.
- **C/P:** warts are soft, elongated and even pedanculated.
- **Site:** The most common sites in male genitalia are glans, prepuce and shaft of penis. And in female genitalia is Vulva where masses tend to be large with bad odour. Perianal warts are similar to vaulvar wart in being hyperplastic.
- **N.B:** During pregnancy, vulvar wart may attain large size which may be severe enough to obstruct labour.
- **N.B:** In genital wart, if there is sudden enlargement or signs of inflammation or prolonged duration, malignant changes should be suspected.

Treatment:

a. **Prophylactic TTT:** to avoid transmission and autoinoculation:

1. Avoid nail bitting in patients having periungual warts.
2. Planter wart should be covered by plaster or rubber socks.
3. In genital wart, condoms should be used or abstain intercourse till healing.
4. Towels in general should not be shared.

b. **Active TTT:**

1. **Electrocautery:**

Electrocatery is restored for severe and persistent cases. It needs local anaesthesia as it's usually painful and it should be done carefully as it may leave scar.

2. **Chemical cautery:**

Salicylic acid preparation	formaldehyde	glutaraldehyde	podophyllin	other
Salicylic acid can be used one in different concentration or with other chemicals: a. Preparation of (Salicylic acid 16.7% and lactic acid 16.75% in flexible collodion add to 100): Is ttt of choice in hand and feet warts. Applied on wart after the surface is abraded, closed with adhesive blaster and left overnight. b. Using of adhesive blaster containing 40% salicylic acid: might be very useful for planter wart. It's used daily.	Formaldehyde (aqueous solution) is very useful in planter wart. Application for 15 minutes or overnight can produce cure rate up to 80% in 6-8wks of continuous use.	Glutaraldehyde 10% in aqueous ethanol can be used daily. Both glutaraldehyde, formaldehyde can cause dryness of skin and allergic contact dermatitis.	Used mainly for anogenital wart. Suitable preparation: from 15-25% in compound tincture of benzoine. One application may be enough or repeated until complete clearance. Should not be used in: pregnancy, large areas, or on bleeding surfaces. Podophyllin 25% in liquid paraffin may be effective in planter warts.	Other caustics like TCA, silver nitrate and glacial acetic acid can be used.

(# of genital wart) ⑪

→ Therapeutic Modalites for HPV infections :

① Chemical destruction : e.g Salicylic acid 7.5 , Lactic acid 7.5
② Physical destruction → Surgical excision or electrosurgery ∵ HPUs are resistant to Heat (due to absence of Viral envelope)
→ Cryotherapy → with Liquid nitrogen
less Commonly → CO2 } → especially for genital warts (///) Treatment of during pregnancy

③ Chemotherapeutic agents → podophyllin resin 20% In collodion → For genital warts.
→ podophyllotoxin 0.5% → applied by The patient at home. (twice daily) 3 days
→ Bleomycin → intralesional → non-genital warts.
→ 5FU → Topically
→ Vaginal & urethral wart.
→ adjuvant Therapy → after Laser → to ↓↓ recurrence

) Laser Therapy → Followed by Topical 5FU → to ↓↓ recurrence

Oral retinoids → For EV → as antiproliferative
antiangiogenesis.

Imiquimod 5% cream (aldara) → used in # of Condyloma accuminata in adults.
• immune response modifier
• Unique → it does not rely on physical destruction of The Lesion as other Therapies
But it is directed at eradication of The causative agent (HPV)

• Mechanism
→ after viral infection → Keratinocytes and other cells release cytokines e.g INFα, TNF,
IFN-γ is a cytokine → act to protect adjacent keratinocytes from viral infection
Until Specific CMI responce is induced
→ Topically applied Imiquimoid (aldara) can induce keratinocytes and other cells to release INF-α → to inhibit Viral replication directly & to promote stronger CMI

• Application
- Cream → supplied in a single-dose packet.
- applied to The involved area by The patient
3 times /week at bed time
washed after 6-10 hours
Treatment duration is up to 16 weeks

٣مرات في الاسبوع قبل النوم
يغسله بعد ٦ ساعات .
٤ شهور

Side effects
Local irritation → erythema
→ itching
→ erosions.

ic immunomodifiers
- interferon α 2b → intralesionally → 3 times /week For Condyloma accuminata
- Systemic # by SC or IV route with interferon → also been tried.

otherapy e.g intralesional injection of Candida antigen.

3. **Cryotherapy:**
   Freezing of wart by CO2 snow or liquid nitrogen is frequently used for t of warts. If warts don't clear from the first application further applicatio can be applied every 2 wks.
4. **Surgical method:**
   Excision should be avoided as it produces scarring and recurrence of warts is frequent.
5. **Other methods:**
   - Retinoic acid: can be used in plane wart or even warts.
   - Etritinate may be helpful in some difficult or wide spresd of plane wa
   - 5-fluorouracil (5-FU): 5% of 5-FU is effective in ttt of plane wart as w as planter warts. It acts by inhibiting HPV replication.
   - Dinitrochlorobenzene(DNCB).
   - Bleomycin.
   - Interferon: may be useful in ttt of severe disseminated warts in immunodeficiency patients.

... therapy → after laser → to ↓ recurrence

④ Laser Therapy → Followed by Topical 5FU → to ↓ recurrence

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erosions.

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- S. dermis # by (SC) or (IV) route with interferon → also been tried.

Epidermodysplasia verruciformis (EV)

Def:
EV is an AR hereditary disorder. In which there is a distinctive pattern of abnormal response to some HPV.

Aetiology: more than one HPV can be responsible for development of EV, examples:

- HPV3: cause flat wart-like lesions involving hands, face and whole skin except trunk.
- HPV5: cause flat wart-like, pityriasis versicolour like, depigmented and pigmented plaques. Affect whole skin including trunk.
- HPV8: cause flat wart-like red plaques, pigmented and depigmented plaques involve whole skin.
- HPV9: cause flat wart-like and red plaques involving whole skin.
- HPV10: induces flat warts and elevated flat warts involving whole skin.
- HPV14 and 15: induces flat wart-like lesions and red plaques involving whole skin.

Pathology: the histological picture is like of plane wart but with frequent vacuolated cells seen within and below granular layer.

Clinical features:

- The disease characterised by early and progressive development of plane wart-like lesions on face and neck, and common wart-like lesions which tend to be larger and firmer on the trunk and extremities. The lesion tends to be confluent in large plaques.
- The wart usually starts in early childhood but may appear at any age.
- The lesion in EV are divided into:
  a. Benign lesions:
     - Pityriasis rosea like lesions.
     - Common wart-like lesions: on trunk, limbs.
     - Plane wart-like lesions: on face.
     - Psoriasis-like-lesions: on elbow, knee.

Epidermodysplasia Verruciformis (EV)

Q:- Epidermodysplasia Verruciformis.

- Rare. AR ; Familial skin disease, usually begins in childhood.

Clinically

- it is characterized by ⓐ Long Lasting, widespread Flat, wart-like lesions → Face/arms/legs/back of hands.
  ⓑ Macular erythematous PV-like lesions → Face/neck/Trunk/arms → tend to become confu
- Malignant transformation → of some cutaneous lesions occur in (½ of patients)

Etiology

- Different HPV types occur in EV → Frequently 5 & 8 only HPV 5 (Found in Most Cancers), HPV 8 (oncogenic potential
- EV types → induce EV-like eruptions → in immunosuppressed patients (e.g AIDS, Lymphoma patients)
- EV-related HPV → have been isolated from normal skin of healty individuals (highly sensitive PCR detection)
  → indicating that Normal population act as reservoir for EV-types.
- Recently → a Mutation in 2 genes EVER1 & EVER2 → have been identified as cause of EV.

Histopathology

- dent on the HPV type involved.
- 3 → induce flat wart like lesions → Similar to that of common wart.
- 5 (More extensive lesions) →
  - Swollen Keratinocytes
  - with light blue Cytoplasm
  - nuclei ranging from small & pyknotic • → large with marginated chromatin

b. Carcinomatous lesions:

- Bowen's disease which detected as raised plaques that may be red or pigmented. They may look like psoriasis in beginning bu development of crusts and ulceration on the lesions suspect fo malignant transformation.

DD: TVC, LP, Psoriasis, Bowen's carcinoma, Acrokerato-verruciformis of Hopf.

TTT:

1. The patient should avoid sun exposure and X-rays as theses may accelerates development of Bowen's disease.
2. Oral retinoid as Etretinate in dose of 1mg/kg/day was found to be effective in many cases.

Bowenoid papulosis

- Type of intraepithelial neoplasia

Cause → HPV

Benign course . malignant transformation in 2%

HIP → scattered atypical cell or full thickness atypia
loss of granular layer

CIP → small red/brown flesh coloured flat or warty lesion ♀ labia ♂ penis

Tt → regress spontaneously
if persist Tt as genital wart

~~Acro~~ acrokeratosis verruciformis

genodermatoses

disorder of keratinization due to ATP2A2 gene AD

occur in Darier dis

CIP → multiple flat-topped symmetrical, skin coloured keratotic lesion on dorsum of hand

- Common in children
- may be asymptomatic
- associated ē nail dystrophy.

HIP → acanthosis - hyperkeratosis, papillomatosis
granular layer thick.
acantholysis → rare
crunch-spine → epidermal elevation

Tt → cryotherapy
laser
isotretin